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ABSTRACT

The issue of the degree to which program duplication among two or three of Arizona's universities diverts resources from other priority needs of higher education is addressed as one of the working papers in the final report of the Arizona Board of Regents' Task Force on Excellence, Efficiency and Competitiveness. Specific arguments for the internal needs for program duplication include: (1) (1) the opportunity to teach the upper-division courses required by majors in a discipline enhances the department's ability to attract and retain a more qualified faculty; and (2) the absence of graduate students significantly hampers research. External needs justifying program duplication include: (1) physical restraints are sufficiently critical; and (2) population pressure for access is sufficient. Areas of discussion are: current status of program review; process for review of proposals for new programs; proposal review process for review of existing programs; and criteria for identifying programs for review. To assure the public that accountability exists for the resources made available to the Arizona public universities, a continual review of the procedures used to initiate new programs and to assure the efficiency of existing ones should be required by the policies of the Board of Regents. Particular attention should be given to programs of low productivity that are duplicated within the system. An appendix provides information on the degrees awarded in various program areas. Contains 4 references and 6 tables. (SM)

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PROGRAM DUPLICATION IN ARIZONA UNIVERSITIES

ROBERT MACVICAR

During its study, the Task Force addressed the issue of the degree to which duplication of programs among two or three of the universities diverts resources from other priority needs of higher education. Program duplication, insofar as it exists in Arizona, must be viewed from a different perspective than is the case in states that have more campuses or a more dispersed population distribution. Hence, the criteria to be applied to indicate programs which should be reviewed by the universities and by the Regents for unnecessary duplication must be carefully developed and used with caution. In dealing with the efficient use of resources and program quality, program duplication represents a target for continuing review.

Duplication of a program at more than one site is justified by factors internal to the universities offering the programs and external in the environment, most significantly demand by place-bound individuals. If there is congruence between the internal and external need for the program, justification for offering two or more opportunities is more easily defended.

Internal needs for program duplication are usually related to program quality. Specific arguments for duplication are:

- The opportunity to teach the upper-division courses required by majors in a discipline enhances the departments' ability to attract and retain a more qualified faculty.
- In the absence of the challenge of majors with their special interest in the subject, faculty who remain may become "stale," with a resulting reduction in quality of instruction in the general education courses.
- Absence of graduate students significantly hampers research. The most talented faculty face serious handicaps in maintaining a vigorous research program.
- A relatively broad array of graduate programs is characteristic of a "comprehensive research university."

External needs justifying program duplication usually relate to demands which are substantial. Therefore, further reduction in cost through "economy of scale" factors does not justify the denial of access to place-bound persons.

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- A significant number of programs have a societal demand for graduates so great that duplication does not significantly increase unit costs (cost per student credit hour).

- Population pressure for access is sufficient to justify duplication in more than one metropolitan area, particularly for that fraction of the student population who are "place bound" by economic or other reasons.

- Physical restraints (campus size, transportation networks) are sufficiently critical to justify program duplication in the same metropolitan area.

CURRENT STATUS OF PROGRAM REVIEW

Program evaluation in the Arizona universities on a decennial basis is currently required by Board policy. The procedures vary among the universities but usually involve external consultants and the development of a report followed by review by Board staff and the Board. Since the process focuses on internal criteria of adequacy, the issue of duplication is not significantly addressed in the review process, although the existence of the same program in another university (or universities) may effect the demand for and hence the size of the student body in the program. The adequacy of decennial program review is dealt with in the report of the Task Force staff and the consultant who examined the process. The report details the findings and makes recommendations about the procedures currently employed and their improvement. While this internal program review can and doubtless will be improved, it is unlikely that it will seriously address the issue of unnecessary duplication.

PROCESS FOR REVIEW OF PROPOSALS FOR NEW PROGRAMS

The most important review process with respect to duplication of programs should be undertaken when a program is in its proposal stage. There are very few baccalaureate degree programs that are not available at one or more of the universities. There is less duplication at the M.S./M.A. level although almost all of the major disciplines are included in the graduate offerings of one or more of the campuses. Doctoral level programs are available in most of the areas offered by the University of Arizona, many of those at Arizona State University and relatively few at Northern Arizona University. At present, no doctoral programs are available at ASU West, although the faculty of this campus may participate in doctoral committees on the main campus at Tempe. The first step in the institution of a new program is the submission of a request for a "planning authorization." This document outlines the justification for the ultimate approval of the degree by the Board and indicates the resources which will be required in terms of faculty time, student stipends or fellowships, and other support supplies and services. The proposing institution indicates the funding sources for the program (reallocation, augmentation by approved decision packages, external funding from resource grants and contracts). In the case of duplicated programs, the demonstration of both internal and external need will require substantially stronger evidence. The proposed new program must be relevant to the strategic plans of both the university and the system.

Experience in other states has demonstrated that avoidance of duplication in the absence of a clearly demonstrable need is far more effective than elimination of programs once they are in place. In the absence of a strong case based primarily on the need of the new program to serve the manpower needs of Arizona, the Board should be reluctant to permit the initiation of duplicate programs at the graduate level. Baccalaureate programs and professional master's degree programs can be justified more readily if significant numbers of place-bound students can be identified. In some situations, however, an accumulated demand may exist but once this is satisfied the number of students on a continuing basis may be too few to justify the program. In such situations, provision of the program by extension may be a more appropriate means of meeting the need.

In attempting to justify new programs, it is not uncommon for universities to assert that "no additional funds are required." Since it is obvious that the creation of a new program will, in fact, incur significant additional costs, the source of these funds within the existing budget should be clearly identified and, in most instances, this must result in diminished effort elsewhere. Changing circumstances bring about shifting program requirements. Universities should be encouraged to review their current offerings with the intent of shifting resources from programs of decreasing demand, particularly if those programs are offered elsewhere in the system and are underutilized.

PROPOSAL REVIEW PROCESS FOR REVIEW OF EXISTING PROGRAMS

The Board policies require each university to examine each program area on a ten-year cycle. This process as it is currently carried out focuses on internal needs for quality enhancement and not on the productivity of the program in terms of degrees conferred.

Because of the potential for increasing efficiency and enhancing quality by phasing out marginal programs, the continuation of which cannot be justified, the Board staff should carry out a systematic survey of all programs on a periodic basis, perhaps every three to five years. Particular attention should be paid to duplicated programs but recognition should be given to programs of low productivity regardless of the issue of duplication, since some programs can be made available by interstate cooperative mechanisms. This review at the level of the Board will permit early identification of problem areas that may appear during the interval between the decennial reviews.

Subsequent to the identification of programs targeted as appropriate for review by the application of the screening criteria, the Regents' staff and the appropriate university officials will study the data and decide whether or not to pursue an in-depth review.

CRITERIA FOR IDENTIFYING PROGRAMS FOR REVIEW

It is recognized that an important and often overriding criterion for the evaluation of a program is the quality of the program and its contribution to other related programs of high demand.

Unique opportunities are offered by the location of the institutions in the semiarid and arid regions of the Southwest. The shared border with Mexico creates special obligations and opportunities for the universities of Arizona. The presence of a large number of American Indians provides an opportunity for investigation and creates a special demand for services. The location of national centers for research in proximity to the universities provides opportunities that are relatively unrelated to the demand for professionals in Arizona.

The criteria listed below are the beginning of a process of review that may go no farther than the Regents' staff, who may recognize a uniqueness in the program that makes a formal review process unnecessary.

The procedure for review should also recognize the authority and responsibility of the leadership of the university to establish priorities within the mission and scope of the institution based on their evaluation of the peculiar circumstances and opportunities of the time and place. The university president, however, will often be assisted in making appropriate decisions if there is clear evidence of Regential support to counter the protests, both internal and external, that inevitably follow a decision to reduce the level of or discontinue a program.

A review of the literature and the advice of a nationally recognized consultant led the Task Force staff to recognize the following criteria as appropriate for the identification of programs for more intensive review, particularly if the program is duplicated within Arizona.

- Degree completions by level (BA/BS, Master's, Doctorates) on an annualized basis. While degree completions are less important in some respects than credit hour production, they do represent the basic output of a degree program and, hence, small numbers are likely to result in high per capita costs. The absence of a "critical mass" of students for effective interaction in the departmental courses for the major (a likely but not necessary corollary) will negatively affect quality. The precise number of degrees at each level to trigger a review is a matter to be negotiated between the Regents' Staff and the Council of President's.

- Number of interactive faculty in the program. Second only to students in significance is the number of faculty to which the students are exposed. By interactive faculty are meant those who actively participate in instruction of the programs, and, for graduate programs, the number who hold Graduate Faculty status and direct thesis research.

- Number of student credit hours taught by level. The number of student credit hours taught at each level is an output indicator that is a highly significant element in the assessment of the efficiency of the instructional unit. In numerous cases, the faculty involved in the major field also provide significant service to the general student body or to students majoring in related areas. Involvement in interdisciplinary programs or in organized research or public service programs must also be considered. Thus, both the number of faculty assigned to the department (or other unit) and the degree to which they are assigned to other than the instructional function will need to be determined.

- Resource indices. The "efficiency" of programs can be measured by such indices as:

  1. cost per student credit hours by level (lower division, upper division, master's level, doctoral level);

  2. by student FTE: faculty FTE ratios;

  3. by demand for support services per FTE student;

  4. by space occupied per FTE student.

- Duplication. Whether or not the program is available at another institution within the state or in another state through reciprocity agreement is an important criterion for identifying university programs for review.

Once a program has been selected for intensive review, the issue of quality becomes significant. While many aspects of evaluation for quality are, of necessity, qualitative, there are some quantitative elements that are directly related to quality. Such criteria as total research funding available per FTE faculty provide insight into the level of activity and, thus, the environment for graduate theses. In areas in which research grants are less available, the publications record of the faculty provides insight concerning the level of scholarly activity. In the final analysis, however, peer judgment by competent external consultants is the most effective way to seek evaluation of the quality of the program and whether, despite negative indications, it deserves special consideration for retention.

SUMMARY

To assure the public that accountability exists for the resources made available to the Arizona public universities, a continual review of the procedures used to initiate new programs and to assure the efficiency of existing ones should be required by the policies of the Board of Regents. In addition to a qualitatively oriented decennial review conducted by the university, the Regents' staff should, on a three- to five-year cycle, examine various productivity and efficiency indicators and initiate, with the cooperation of the affected universities, a survey of programs judged to require such review. Particular attention should be given to programs of low productivity that are duplicated within the system.

APPENDIX

The information in this Appendix centers only on the degrees awarded in various program areas. No attempt is made to determine either quality or program effectiveness. Other criteria that should be considered when looking at issues of program duplication are cited in the text.

Studies pertaining to program duplication undertaken at public institutions in other states were reviewed, especially those in Montana and Colorado. The Montana study followed guidelines established in a study commissioned by the Ohio Board of Regents (1,2,3).

The Ohio study was concerned with the state's needs for higher educational services, statewide employment needs and opportunities, program conformance to institutional missions, geographical access and program costs. It defined duplication as "two or more institutions offering the same program in a limited geographical area and to a limited

clientele." It stated, "Perhaps no state-level review objective is more troublesome than that of the avoidance of duplication."
The concern that high-cost programs with low enrollments were being offered by more than one state-supported institution led to the Montana study.

The Colorado Commission on Higher Education undertook an extensive program review beginning in 1987 with the following objectives:

1) to phase out degree programs that are unnecessarily duplicative;

2) to phase out degree programs that produce few graduates and are less than vital to fulfilling the state goals of quality, access and diversity;

3) to phase out degree programs that are peripheral to the role and mission of the institution; and

4) to retain degree programs that provide the only means of assuring geographic access or that satisfy a demonstrable educational need of the institution's service area that cannot be met by other means.

The criteria applied in Colorado were:

whether the programs are duplicated in the public higher education system;

whether they are efficient in producing graduates; whether they are central to the institution's role and mission;

whether they are essential to other program offerings at the institution;

whether they are the only means of assuring geographical access;

whether they serve a demonstrable educational need of the service area that cannot be met by other means; and whether they are vital to fulfilling state goals of quality, access, and diversity.

In Cycle 1 of the review in Colorado, 424 programs areas were examined and of these 64 were discontinued. In Cycle 2, of 330 program areas examined, 15 were discontinued. The recommendations from the Cycle 3 study of 321 program areas were to be acted upon at the June 1988 meeting of the Commission.

Based on the experiences of these studies, we chose the following numbers as standards for reviewing programs at the Arizona universities. These numbers cannot be viewed as absolutes. They serve as reasonable benchmarks to determine where unnecessary duplication might exist.

Type of Degree Program	Number of Degrees Granted
Bachelor's	
Duplicated programs	10
Non-duplicated programs	5
Master's	
Duplicated programs	5
Non-duplicated programs	3
Doctorate	
Duplicated programs	2
Non-duplicated programs	1

The degrees awarded in 1987 at all three institutions were reviewed for their adherence to these standards. The results are shown in Tables 1 through 6.

The Board of Regents' Academic Degree Program Inventory and Planning Document was the source of current degrees offered and planning authorities granted, and the degree figures cited were obtained from records maintained in the Board of Regents' Office.

Table 1 (Bachelor's Degrees in Duplicated Programs) shows several program areas that, based on degrees granted in 1987, warrant review.

but then 4 in 1986 and 4.5 in 1987. At ASU, only 1 degree in Italian was presented in 1986 and then none in 1987. General Home Economics, with only 2 degrees at UA, would appear to be declining; there were 6 degrees in 1983, none in 1984 and 1985, and 3 in 1986.

While Earth Sciences at NAU appears low for 1987, in 1986 the department awarded 11 degrees. At UA, however, the 1986 figure was 2.

TABLE 1

Bachelor's Degrees Duplicated Programs, 1987

UA	# Deg.	ASU	# Deg.	NAU	# Deg.	
Med Tech	9	Med Tech	10	Med Tech	0	
German	6	German	6			
Italian	4.5	Italian				
Russian	9	Russian	18			
Physics	10.5	Physics	15	Physics	2	
Philosophy	5.4	Philosophy	6	Philosophy	2	
Religious Studies	9	Religious Studies	3	Religious Studies	0	
Earth Science	3			Earth Science	6	
Geography	4	Geography	34	Geography	9	
Music Ed.	9			Music Ed.	7	
Music	3	Music	6	Music	4	
Spec. Ed.	.5	Spec. Ed.	59	Spec. Ed. dual		
Dance	6	Dance	12			
		Botany	5	Botany	2	
Geosci	26	Geology	10	Geology	12	
		Physical Therapy	6	Physical Therapy	22	
Health Ed.	6			Health Ed.	1	
French	12.5	French	19	French	1	
Spanish	27.5	Spanish	32	Spanish	3	
		Zoology	18	Zoology	10	
		Hum & Soc Sci (Interdis)	1	Human & SocSci	2	(Interdis)
Anthropology	36	Anthropology	15	Anthropology	8	
Economics	30.5	Economics	97	Economics	3	
		Theatre	20	Theatre	4	
Art History	11			Art History	2	
Matls Sci & Engr	2	Matls Sci & Engr	1			
Genl Home Ec	2	Genl Home Ec	118	Genl Home Ec	19	
Cons. Serv. Food	3			Food Serv Mgr	1	

It is helpful to look at degree figures from earlier years to note whether a program is experiencing a one-year decline or whether an enrollment pattern can be seen. In the case of Italian at the UA, the degrees granted might represent a renewed interest; 2.5 degrees were granted in 1983, none in 1984 or 1985,

In Table 2 (Bachelor's Degrees in Non-duplicated Programs), one notes that only 1 degree was granted at UA in Entomology; in 1983, 3 degrees was given, there were none in 1984 and 1985, and there were 2 in 1986. Engineering Science at ASU has been relatively constant during the past five

years, with 1 degree in 1983, 2 in 1984 and 1985, 1 in 1986, and 2 in 1987. Table 3 gives the figures for Master's degrees in duplicated programs.

Although only 1 degree was awarded in German at both UA and ASU, in 1986, there were 6 degrees at UA and 2 at ASU. There were only 2 degrees in Spanish at UA but in 1986 there were 11. Some critical areas such as Chemistry and Physics whose lower-division courses draw large enrollments do not award many Master's degrees. NAU has not awarded a Master's degree in Chemistry since 1984; at ASU, there was 1 degree in Physics in 1986 and 3 in 1987. In Philosophy, ASU awarded 1 degree in 1983, none in 1984, 1 in 1985, none in 1986 and 1987.

this is a new program and its vital place in the Materials Science research at UA should bring these numbers up. The output of the Statistics program at UA is low (1 degree in 1983, 1 in 1986 and 2 in 1987; ASU has been given authority to plan a degree in this area. Degree figures for School Psychology (NAU) have been low: none in 1986 and 2 in 1987. Likewise, Social and Philosophical Foundations at ASU gave no Master's degrees in either 1985 or 1986, and only 1 in 1987. Engineering Mechanics at UA, with no Master's degrees granted in 1987, gave only 1 in 1984, 1985 and 1986.

TABLE 2

Bachelor's Degrees Non-Duplicated Programs, 1987

UA	# Deg.	ASU	# Deg.	NAU	# Deg.
Irrigation	2	Engr Sci	2		
Bio engineering	6				
Agr. Comm.	2	Hous. & Urban Dev.	0	Voc. Indus. Educ.	5
Agric.	5				
Wildlife & Fish	1			Math Sci (Appl)	4
Plant Sci.	5				
Environ. Sci	2				
Range Mgr.	4	Asian Lang.	2*	Public Admin.	5
Soil & Water Sci.	2				
Public Planning	3				
Nat. Res. Res.	1	Choral	3	Intl. Affairs	3
Regional Dev.	3				
Food Serv. Mgr.	1				
Drama Educ	2				
Agr. Engr.	3				
Met. Engr.	4				
Mining Engr.	3				
Engr. Math	4				
Cons. Study & HomeMgr.	1				
Extended Engl.	2				
Classics	.5				
Linguistics	5				
Entomology	1				
Greek	2.5				
Atmos Sci	2				
Hyrology	5				
Dramatic Theory	3				
Home Ec Educ	4				

* Asian Languages at ASU includes Chinese and Japanese. At UA, these languages are included in the offerings of the Department of Oriental Studies. In 1987, 18 Bachelor's degrees were awarded at UA in Oriental Studies. There is no breakdown to show how many of these degrees were in Chinese and Japanese languages.

The figures in Table 4 (Master's Degrees in Non-duplicated Programs) are low for Materials Science and Engineering, but

Doctoral degree figures are reviewed in Tables 5 and 6. Table 5 shows that no doctorates were awarded in Spanish in

1987 at either UA or ASU. In 1986, UA gave 3 and ASU gave 1.
Although the Geology program at ASU awarded only 2 Ph.D.'s in 1987, in 1985 there were 6 and in 1986, 5.

Table 6 shows no doctoral degrees at ASU in Educational Technology, but there were 5 in 1983, 3 in 1984, 2 in 1985 and 5 in 1986. Although UA is a world-class astronomy center, its output of doctorates in this discipline is small: only 1 Ph.D. was awarded in 1987, with 3 in 1985 and 1986.

TABLE 3

Master's Degree Duplicated Programs, 1987

UA	# Deg.	ASU	# Deg.	NAU	# Deg.
German	1	German	1		
Architecture	1	Architecture	21		
French	3	French	2		
Spanish	2	Spanish	4		
Music Ed.	2	Music Ed.	8		
Chemistry	9	Chemistry	4	Chemistry	2
Physics	7	Physics	3		
Political Science	6	Political Science	2	Political Science	1
Sociology	5	Sociology	3	Sociology	2
Microbiology	5	Microbiology	0	Microbiology	0
Math	7	Math	2	Math	10
Economics	6	Economics	4		
Geography	8	Geography	3		
Educ Media	11	Educ Media	3		
Biling/Bicult	18	Bilingual/Crosscult	3		
Anthropology	16	Anthropology	11	Anthropology	4
History	8	History	8	History	4
Educ Psych	0	Ed Psych	10		
Publ Admin	5	Public Admin	27	Public Admin	3
Comm	2	Comm	12		
Chem Eng	8	Chem Eng	5		
Spch & Hearing	30	Comm Disorders	4	Spch Path	11
Philosophy	7	Philosophy	0		
Music Composition	1			Music Composition	0

TABLE 4

Master's Degree Non-Duplicated Programs, 1987

UA	# Deg.	ASU	# Deg.	NAU	# Deg.
Animal Physiol	1	Environ. Res. in Agr.	2	School Psych.	2
Fdns. of Educ.	1	Instrumental Music	1		
AerospaceEngr.	2	Soc&PhilFdns	1		
Agr. Engr.	1	Recreation	3		
Engr. Mech.	0	Theatre	3		
Anatomy	1	Theory & Comp	3		
Classics	1	School Library Sci	0		
Plant Path.	2				
Entomology	2				
Appl.Math.	2				
Statistics*	2	Statistics*			
Matl Sci. & Engr.	1				
Water Res Admin.	1				
Art History	2				
Music Theory	1				
Range Mgt.	2				
Fisheries Sci.	0				
RNR Studies	1				
Dairy Sci.	0				
Plant Protection	3				
Landscape Arch.	3				
Marketing	3				
Ag. Educ.	3				
Mining Engr.	3				
Pharm. Sci.	2				
Genetics	3				
Pharmacy	3				
Linguistics	2				
Home Ec Educ	3				

* Planning Authority Granted

TABLE 5

Doctoral Degrees Duplicated Programs, 1987

UA	# Deg.	ASU	# Deg.	NAU	# Deg.
Comp. Sci	1	Comp.Sci	1		
Ed. Psych.	1	Ed.Psych.	5	Ed.Psych.	9
Chem. Engr.	1	Chem.Engr.	2		
Spanish	0	Spanish	0		
History	0	History	2		
Spec Ed	3	Spec Ed	1		
Poli Sci	5	PoliSci	0		
Civil Engr	10	CivilEngr	1		
Sociology	2	Sociology	2		
Math	2	Math	0		
Geo sci	8	Geol	2	Geology	*
Botany	0	Botany	2	Botany	0

* Planning Authority Granted

TABLE 6

Doctoral Degrees Non-Duplicated Programs, 1987

UA	# Deg.	ASU	# Deg.	NAU	# Deg.
Animal Physiol	1	EngrSci	1		
Physiology	1	EducTech	0		
Plant Path.	0	CounselorEduc	1		
Water Res. Admin	1				
Philosophy	0				
Wildlife & Fish	1				
Oriental Studies	1				
Astronomy	1				
Range Mgr	1				
Music Ed	1				
Mining Engr	0				
Spch Comm	1				
Music Ed	1				
Music Theory	1				

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